

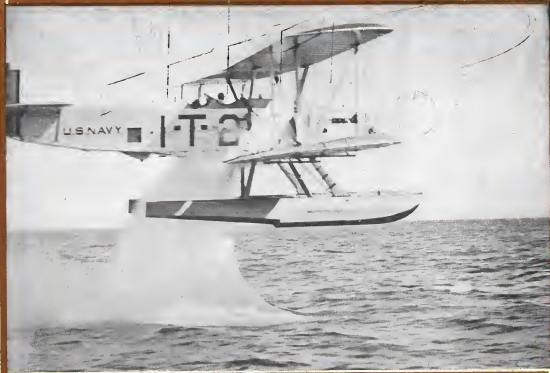
AVIATION

The Oldest American Aeronautical Magazine

JANUARY 3, 1927

Issued Weekly

PRICE 15 CENTS



A Navy CS plane pictured at the moment of dropping a torpedo

VOLUME
XXII

SPECIAL FEATURES

NUMBER
1

PROGRESS—1926
ANNUAL REPORT ON NAVAL AVIATION
DEPARTMENT OF COMMERCE AIR REGULATIONS

GARDNER PUBLISHING CO., Inc.
HIGHLAND, N. Y.

225 FOURTH AVENUE, NEW YORK

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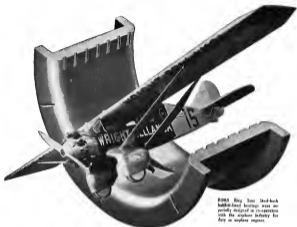
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AVIATION

THE GARDNER PUBLISHING COMPANY, INC.

Business and Editorial Offices—125 FORTY-FOURTH AVE., NEW YORK

Cell Address: A20750

Collection 0500—HUGHSON, N. Y.

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Vol. XXII

JANUARY 3, 1927

No. 1

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Subscription price: Four dollars per year Canada (us) **Annual Periodic** six dollars. Single current copies 30c each. Back numbers if available \$1.00 each. Send address label and subscription order to:

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With the Editor

There is a great sense of satisfaction and pleasure in being able to fill an issue of *Aviation* with page after page of matter dealing with progress, and this, very much more so when the progress recorded is as great and significant as that recorded in the Report of the Aeronautical Chapter of Commerce presented to the President the most authoritative report of the present status of all phases of aviation that has ever been made. The past year has seen air service of the United States become a reality, the expansion of the Aircraft Industry, to which so much of the credit for our present excellent position is due, stabilized with an excellent outlook ahead, Commercial aviation, with the air mail, has become a reality, and the growth of a brilliant future.

Without doubt, the most important external event has been the issuance by the Department of Commerce of the Air Reg. Orders for civil aviation. The complete document is covered, fully, exhaustively, and while it is recommended that everyone actively concerned with aviation study a copy of these regulations because of their extreme significance, they are summarized in this issue in the sense of what is available and the most important points are

And with this excellent record let us wish everyone of the unswerving fraternity a happy and prosperous New Year.

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The CURTISS "HAWK" SERIES



CURTIS F-1B "HAWK," STANDARD ARMY TYPE. CURTISS D-12 MOTOR.



CURTIS F5C-1 "HAWK," NAVY SEAPLANE. CURTISS D-12 MOTOR.



CURTIS AT-4 "HAWK," PURSUIT TRAINING. HEND MOTOR (OR WRIGHT J-5 MOTOR).



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Above are shown four types of the "Hawk" each developed to meet a peculiar requirement of Army and Navy pursuit operations.

Each fulfills its function so satisfactorily that production orders for all types shown above are now being executed.

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Vol. XXIII

JANUARY 3, 1927

No. 1

1926 in Retrospect

LOOKING BACK to 1926, everyone who has played any part in the progress of American Aviation must feel that the past has been the best of any that the art and science and industry have known. The Government has solidified its place into a program that not only satisfies the public, but places its own men and the aircraft manufacturers. The Navy has found its aerial arm to have a real purpose and is proceeding to develop it to the maximum efficiency. The Army Air Corps will have funds to round out a supply of well balanced equipment. The aircraft contractors and accessory manufacturers have felt the stimulus of increased demand and are preparing for a record year in 1927.

Any newspaper, too, will look back at 1926 as the year of its real beginning. Its appeal to all parts of the country has been most encouraging and, with the experience gained during this preliminary period, its progress in 1927 should be actual and substantial. The retail service operators as well as the commercial aircraft manufacturers have found an ever widening market. Now we see growth and new commercial types have put America in the lead in this branch of aviation.

The Air Mail has increased its prestige by its regularity and reliability. While 1926 may take its place out of the hands of the Government, the pioneering work of the men who have so successfully stood by this new development—Progers, Shattuck, Houshman and Glavin—will have their names enrolled in the Golden Book of Aeronautical History.

The Department of Commerce has made its bow in the aeronautical field with a very carefully prepared set of regulations and a spirit of cooperation and helpfulness that give great promise. For the new bureau, every road which is expressed for the coming year and may all the facts that we have had of over-regulation vanish into the past.

In this sociological spirit, the first year's work of the Guggenheim Fund can be viewed with the most complete appreciation and approval. A generous donation, wisely administered and distributed nobly among deserving agencies has given a new impetus to the scientific side of aeronautics. No words of solicitation from the whole aeronautical fraternity are adequate to express the wholehearted esteem in which the far-seeing and optimistic donor is held.

And in connection with the scientific progress of the year, the painstaking and unflinching work of the National Advisory Committee for Aeronautics while known to but a limited circle in describing of the greatest genius and encouragement. At its laboratories at Langley Field, research work is being conducted that would be impossible, except with liberal government support. And it is a fine tribute to the Committee to note that

its schemes have been recognized by adequate appropriations for the coming year.

And now with regard to the future—the prospects for 1927 would hardly be brighter. The past twelve months may almost be regarded as a preparation period for coming prosperity, and few will consider this outlook too optimistic.

Modern Engines in Civil Aviation

IN ALL spheres of engineering progress development is frequently overshadowed by spectacular achievement and, in fact, is sometimes only recognized when a close insight into statistics is made possible. Such is the aspect from which the figures, published elsewhere in this issue of AVIATION, on the total of 1,500,000 miles flown in civilian aviation in the United States and Canada during the past twelve months with the Wright Whirlwind engines may be viewed.

Earlier this year, AVIATION established the fact that America led the World in the commercial use of airplanes, with a total mileage in civil aviation during 1925 of over 9,000,000 miles. Assuming that the commercial flying mileage during the year just closed was no greater than in 1925, which, however, is an assumption quite unfair to civil aviation during 1926, it will be seen that at least one fifth of the commercial mileage earned out has been done on Whirlwind engines.

While these observations reflect the highest credit upon this particular power plant, this is purely accidental, the object at this time being to bring out an important forward step which has been made in the attitude of commercial airplane operators during the past year. For some years after the War, the only power plants suitable for commercial flying were war surplus engines, for the most part, the low-power engines used in military training planes. While these engines have proved highly satisfactory for commercial flying, they could, at best, only serve as a stop-gap prior to the production of suitable modern engines.

The Whirlwind has long been recognized as an excellent commercial engine in spite of its having been developed primarily for naval aviation. That commercial operators are already making such extensive use of this power plant, is one of the most satisfactory signs of the growth of commercial aviation into a sound and reliable system built upon modern engineering.

The overall economy in the use of modern equipment is very well indicated by the record of but three forced landings with the modern Whirlwind engine during the entire 1,500,000 miles of commercial flying. The record is an outstanding example of the state of perfection already reached in practical aeronautical engineering.

Whirlwind Engines in Commercial Flying

The Well-Known Radial Air-Cooled Engine Becomes Almost Standard Equipment in its Class for American Commercial Planes.

ACCORDING to an announcement made by Charles L. Leermans, president of the Wright Aeronautical Corp., Port of Paterson, N. J., Wright Whirlwind engines in commercial use in the United States and Canada will be Dec. 31, 1935, less than 1,774,258 miles in a distance of 71 times around the Earth at the equator. This report is made up from detailed information received in telegraphic replies to a questionnaire sent to the three share commercial aircraft operators using Wright Whirlwind engines in different types of commercial planes.

The record shows only three forced landings due to failure of an engine port, one of which caused other layers to fail, to occupants of the plane. This brings out the remarkable record that Wright engine has, a distance of 5,000,000 miles per forced landing due solely to engine trouble. One of the forced landings was caused when the Wright 4-4 was placed for test purposes on an experimental plane, and the other two took place in high speed test flying over the ground during the work of construction and final test flights.

Thence a number of Wright Whetstone engines during 1938 were in use by the U.S. Army and Navy Air Services, the Hawaiian Air Service, the Cuban Air Service, the Air Service of Chile, Peru, Brazil and Argentina, and were used in the Hercules 1000 Wright engine plane in Germany, the first time in the world that an engine made a part of this compilation due to the fact that this is a record of only commercial aircraft using Whetstone engines.

Now out of the Inactive and under construction of the United States are among Whittaker engines in use or all of these places. This indicates about that thirty-three converted aircraft operators and 184 Wright Whittaker engines and the average machine construction was 763 sales per gallon. Viewed from another standpoint the average machine consumed in 12.9 gal. per engine hour, and the oil consumption of these engine systems three sixth one hour.

During the year 1986, these eighteen types of commercial airplanes made an average speed of 54 mph.

In the Reliability Test

In the Second Annual Commercial Airplane Reliability Tour of 1936, the Ford Tri-Motor, Wright Whittford engines won first place, second place and third place in a field of twenty-five contestants. The tour covered 2,500 miles, flying over ten States. The first plane being won by the Travel Air plane carrying a cargo of 600 lb. in addition to pilot and fuel at an average speed of 124.5 m.p.h. Second place was won by the Bald Verville Alouette, carrying a cargo load of over 800 lb., with a speed of 123.4 m.p.h. Third place was won by the Stinson Detachable, carrying a cargo load of 840 lb. at an average speed of 140.7 m.p.h.

At the National Air Races in Philadelphia, the plane powered with Whirlwinds won twelve of the eighteen prizes for which they competed. Lieut. Comdr. W. E. Byrd, U.S.N., used three Whirlwind engines in his special 25 hr. flight to the North Pole and return.

According to the report received from the Varnay Air Mail Service in June, 1935, they replaced their water-cooled en-

gases with Wright uncooled engines. Since June they have taken their seven engines 100,326 miles with but \$759.08 representing the cost of engine parts on their 550 mile route across the Rocky Mountains from Salt Lake City, Utah, to the State of Washington. That means approximately \$11.06 as the cost of engine repair parts for each 21,845 miles flown. Three of these engines gave over 300 hr. in actual flying service as yet this first month.

During the Denver Air Show, Wright engines was the direct beneficiary. A Ryan monoplane of the Pacific Air Transport made a nonstop flight from Portland, Oregon to Los Angeles, Calif., a distance of 1,050 miles in 9 hr., 20 min.

The experience of the Philadelphia-based Transit Company with the Ingersoll Rand units used by them as their present, used and expensive make from Philadelphia to Norfolk, has been extremely good. They contacted the three engines and ground rollers after 250 hours being. The cost for major parts such as rollers, tires, valve springs, etc., after flying 315,000 miles (and) only \$75.00, or approximately \$0.02 for each engine.

According to the statement worked out by the Wright company, the thirty-three commercial aircraft operators flew 16,482.55 hr in Dec 1, 1956, with an estimated 3,560 kg to Dec 31. The actual volume flown to Dec 3 was 1,628,343.5 added to the estimated notes to be flown. During the month of December of 144,935, hours the total for the year 1956 up to the previous figure of 1,774,288.8

the airplane of the
we could expect

Richard T. Hoyt, chairman of the Board of Directors, Charles L. Lawrence, president, Gray Engineers, Inc. and C. G. Peterson, all of the Wright International Corporation, are enthusiastic in their endorsement of the program for 2007. As the program is being rolled out, their operations represent the needs of the various sectors of commercial aircraft employing the latest and most up to date engine equipment. This first phase is significant as the growth of commercial aviation during 1920 in the United States.

Whirlwinds in the P.R.T. Service

The operation of the Philadelphia Rapid Transit Company's Air Service, with the Wright Whittaker engine and to them on the three 3-engine power to road planes has been excellent. The company controlled three engines and ground valves after 3000 ft. flying at two or three and a few planes were all the parts replaced, three engines being 3300 ft. and the oil service fast service, has been 3300 ft. per hour and the oil consumption, two gal. per hr. The cost of service of the fuel and oil consumption for four months on three engines.

Special bearing metal is used in the Wright governor, which is known as bearing metal No. 2. It is a composition of grades of white metal known as 10-10-10, which contains 10% lead, 10% tin and 10% copper. It is particularly adapted to heavy-duty bearings and engine bearings, etc. This bearing metal contains 24% lead, and possesses the following features: ultimate tensile strength 25,000 lb. per sq. in.; elongation in 2 in. 14%; yield point 10,000 lb. per sq. in.; hardness (500 lb. ball test) 80; 45-60; shrinkage per ft. 6/32 to 1/16; weight 205 lb. per cu. in.; composition information: lead 24.000, tin 10.000, copper 10.000.

Whirlwind Engines in Commercial Flying



At the top, the Ford-Sioux 3 engine Air Transport, and to the right, Walter Smith and Bill Goldborough, winners of the Scholastic Year with the Winfield engine Travel Air. Heading down left, Winthorne Collins, Curtis LeMay, Jonathan Mayhew, 1936-37, 331, Stinson Detroiter. Right, Feltner Universal, Ryan M-1, Gulf-Ferris Aircraft, Feltner Tri-Motor on which Commander Dyer flew to the North Pole, and Gulf Detroiter.

In 1925, the Senate passed the Hughes Bill, which was framed as a result of a very careful personal investigation of the real needs of civil aviation carried out earlier by Senator Thomas Hughes of Connecticut, himself a flier and a real booster of aviation. In March, 1926, the House passed the Merritt-Parker Bill which differed only in detail from the Hughes Bill and had the same objects in view. The two bills went into conference, resulting in the Air Commerce Act of 1926 which received the President's signature on May 20, 1926. The bill provides that the Department of Commerce shall maintain safe to air navigation along recognized air routes and shall regulate and control civil aviation in interstate commerce to the extent of protecting the public. It was this act which created the Assistant Secretary of Commerce for Aviation, to which post this President later appointed William P. McCord, Jr. Later, through a deftly appropriated bill, Congress appropriated, as an initial advance, the sum of \$500,000 for putting the Air Commerce Act into effect, and the President's first Message of last month called for the total sum of \$4,613,750 for the Assistant Secretary, Department of Commerce. Of this sum, \$194,250 is for regulatory work and \$3,919,500 for the establishment and maintenance of airports and aids to air navigation. These sums, when appropriated, will provide the greatest impetus that commercial aviation in this country has ever had. It will be an effort to safety in civil aviation and put our dream of all the best efforts of straight money grants to our operating companies. It is important in its effect upon the development of civil aviation and will give an equal stimulus to all engaged in commercial aeronautics.

One Lead in Civil Flying

As everyone knows, however, it should not be inferred from these remarks that America has lagged in any way as the development of commercial aviation. The past years contain here been of extreme significance in this development. It was never stronger to proceed that we, ourselves, have ever been aware of our own activities, but the year 1926 has proved this to be the case. Early in the year, America, through a very extensive mailing list of commercial fliers throughout the entire country, endeavored to obtain some idea of the airplane down in aerial service operations in the United States during the year 1925. About the same time, the American Chamber of Commerce did likewise, only using a somewhat smaller mailing list.

The figures obtained were astonishing. In many respects they were as great a stimulus to those closely connected with aeronautics as they must have been to the laicman in the street and in our friends across the seas. Work has since, as far as the return of survey statistics were published in these columns,

the mileage mounted higher and higher until the almost unprecedented total figure of 8,203,165 miles flown by civilian fliers in the United States during the year 1925 was reached. Accordingly, as it did by almost 100 percent, the total commercial flying mileage for the whole of America during the year, these figures created a renewed interest in commercial flying in this country. The daily papers published the figures, they were frequently heard upon in Washington and the need for organizing the national commercial air activity was recognized by everyone. The outlook for the future could hardly be more favorable.

The Air Mail

Nor has that momentum anything like all of the civil aviation activity which has been going on. The World has looked upon the United States as the leader in air mail development. The Trans-Continental Air Mail Service operated by the Post Office Department has for years been the model of air mail operation. And it is now forming the backbone of an air mail system covering the entire country which, while it is still in its infancy, is even now giving indications of its tremendous economic value as the Nation's backbone.

In February, 1925, President Coolidge signed the Kelly Bill or Air Mail Act, transferring the Postmaster General in control for air mail service. Immediately, Postmaster General New, enthusiastic as he always has been regarding the possibilities of the air mail, started to lay out a plan of air mail routes for the most profitable bidding for contract on these two air mail routes and was actually the first contract air mail operation to start anywhere and under his control. On Feb. 15, 1926 the first Ford mail plane, an all-metal Stout company with Liberty engine, left Ford Airport, Dearborn, Mich., for Cleveland with the first load of air mail to be served by a contractor. At that time, there were no contracts for air mail already let. And, during the year, all such service and several others throughout such these original ones have not only not only are now operating mail regularly over their respective routes through all weather. It is the most perfect system of real commercial aviation in the World, and no small share of the credit for the entire organization is due the Post-W. Irving Union, Second Assistant Postmaster General in charge of Air Mail Service in the Post Office Department.



The three Assistant Secretaries for Aviation appointed during the year. Left to right: F. Taylor Dorman (D.P.C.), William P. McCord, Jr. (Commerce), Edward F. Rouse (Navy).



PURSUIT PLANE DEVELOPMENT. On the left: a Navy Scout P-18 C, pursuit plane (Curtis D 12 400 hp) and (right) a Navy Curtiss P-18 C, pursuit plane (Curtis D 12 400 hp) and (right) a Navy Curtiss P-18 C, pursuit plane (Curtis D 12 400 hp).

Because of its wide national representation, and the extensive expansion program for the immediate future, there is no doubt that one of the most important activities during the year was the inauguration of the National Air Transport air mail route from Chicago, down through the Southeast, to Fort Worth and Dallas, Tex. On May 12, 1926, the first mail plane to operate on this service took off from Meigs Field, Chicago, Ill. towards the Southeast. The mail was in large quantities, 3000 lb., that two planes, Curtiss Carrier Pigeons, left within a few minutes of each other. On the same day, two Carrier Pigeons left Love Field, Dallas, Tex. for the North, carrying quantities of air mail for Chicago, New York and San Francisco, to be transported over the Government route to the latter two points. After the first three months operation of this route, the N.A.T. reported an average efficiency of over 97 per cent. perfect. Not was this extraordinary, but it represented the general trend of the success experienced by several of the other air mail operations in the world. It will be recalled that only a month or so ago, the National Air Transport, Inc., signed a contract with the American Railway Express Co. for the carrying of express by air, operations upon which contract will probably go into effect as the new fiscal future.

All this extensive progress made during the past year can only spell continued advancement for the future. From the other standpoint, namely, that of technical development of equipment, etc., progress during 1926 has been equally satisfactory. It would be entirely impossible within the limited space available for this article, to set down in its correct and rightful position each individual forward step made in each individual field of aeronautics. Nevertheless, the progress, as a whole, is outstanding. As a result, very largely of the continued production of light commercial airplanes, such as the Waco, Beechler, Englewood, Travel Air, etc., airplanes which are recognized as their class by any foreign product, the aerial service operations and private flying throughout the country are ever increasing. The mail and private plane operations which have become possible during the past year have had a materially favorable bearing upon this class of flying.

The Airplane Reliability Year in the Ford Trophy brought out very vividly the high standard of excellence which has been reached in the design and manufacture of this class of plane. Twenty-seven airplanes started in this \$2500 mile tour of the Middle Western states. Of these, all except the Ford Stout three-engine plane and the Ford-Stout single engine



Three aviation chiefs in Washington. Left to right: Major General Henry H. Harkness, Chief Army Air Corps, Rear Admiral William A. Mitchell, Chief Bureau of Aeronautics, and Major General William A. Mitchell, Chief Bureau of Aeronautics.

transport machines, were of the light commercial class, although some were equipped with 200 hp. Wright Whirlwind engines. Of these two-seven planes, only one failed to complete the Tour, which is certainly a very small percentage considering that the Tour was carried out in schedule throughout.

Such efficiency and reliability in these machines could never have been made possible were it not for the fact that transportation, apparatus, etc., have been brought to such a state of perfection that they are unquestionably dependable. The most and modern commercial engine without doubt is the Wright Whirlwind 200 hp. six-cylinder radial, the reliability of which powerplant in commercial planes is told elsewhere in this issue of *Aeronautics*. The Whirlwind has set a new standard in reliability of commercial engines.

Engine Development

The real high spot in airplane engine development during 1926 was the production of the Pratt and Whitney Wasp, a nine-cylinder radial air-cooled engine which develops approximately the same power as a Liberty as in reduction of something like 300 lb. in dry weight. The normal high speed of the engine is 1600 rpm and it is a very considerably made at 400 hp. The dry weight of the engine, including all accessories except the starter, is 550 lb. which is a little over 1.4 lb. per hp. This engine, developed by the Pratt and Whitney Aircraft Company in close cooperation with the Bureau of Aeronautics, Navy Department, represented one of the most important steps in the Navy's policy of equipping its airplanes which so far with the first with air-cooled engines. As a new development, the Star's Curtiss biplane powerplant was equipped with the Wasp engine, has surpassed all expectations.

The engine field is well being defined a progressive one for the first engine are always developed from earlier types and consequently the airplane engine has been a field in frequently overlooked. Some years ago, the Curtiss company developed the D-12 engine which manifestly set a new standard in high power water-cooled engines. Since that time, the V-1200 of 1920 was developed from the D-12 and this year has had the progressive step in the evolution of the new Curtiss V-1500 700 hp. water-cooled engine which put up such an excellent performance in the Schneider Cup race in Thompson Beach last November, in spite of not being a winner and in spite of the bad luck which befell Lieutenant Callahan's plane when a faulty gearlock pump caused his engine to stop before he had time to do a job as he was about to finish his

last lap with a perfect performance at a speed of over 220 m.p.h., having done so high as 242 m.p.h. in a previous lap of the course.

The most progress to be recorded in the case of the Pan-American engine from which with the 1500 and 2500 engines in a line, the models 24, 24, and 24, have been produced in addition to the standard engine, all of which are in regular service.

The Polar Flight

It was with this standard of equipment that Lieut. Comdr. Richard E. Byrd, U. S. N., set out from New York on April 9, in the R. E. Godfrey, with a Fisher monoplane equipped with these Wright Whirlwind engines, for Spentennan from where he planned to attempt a flight to the North Pole and back. The story of this remarkable flight of a single over 35 by direction which carried Commander Byrd and his crewmen and pilot, Floyd Bennett, to the North Pole has been told repeatedly and is familiar to all. It will serve as the first and the flight represented one of the greatest aerial achievements of the day, not only from the standpoint of human endurance but also as an example of the possibilities in flying to all parts of the world.

It is also, unfortunately, in recording such achievements as have been discussed in this article, that many contemporary critics but certainly equally important factors are of necessity entirely neglected. For example, in spite of the excellent condition of the 15-hp engine which was without a failure throughout the entire flight in the North Pole and back, this could never have been possible had it not been for the fact that these engines were equipped with magnets of the reliability of the Whirlwind with two of which every Whirlwind engine is fitted, in addition to these magnets being standard equipment on every other engine manufactured in this country, almost without exception. These magnets are older than 1926, if not true, but their development has been another of these continuous progress.

Similarly, with other equipment such as propellers—Curtiss Reed metal propellers, Hamilton propellers, standard steel propellers, all have undergone development during the year and hence as they are in such extensive use, during a year in this domain is indeed progress.

The Future

The future is far beyond the scope of this discourse. Yet, because of its far-reaching effect upon the future, one of the most important landmarks in aviation progress during the past year has perhaps been left out and the last. Reference is



The first plane in Curtiss Carrier Pigeon, of the National Air Transport, leaving Maynard Field, Chicago, for Dulles on May 12, 1926.

made to the creation of the Daniel Guggenheim Fund for the Promotion of Aeronautics. On Jan. 16, 1926, Daniel Guggenheim, founder of the Guggenheim Island at Americana in New York University, wrote a letter to Secretary Hughes announcing his desire to create a fund of \$5,000,000 for promoting aeronautical education in colleges and among the general public, for extending fundamental aeronautical research, developing commercial aircraft and equipment, and furthering the use of aircraft in business. During the year, the Fund, under the able direction of a committee headed by Rear Admiral H. L. Clegg, U. S. N., and the Vice-President of Henry T. Guggenheim, one of the seven law school graduates at California Institute of Technology and Leland Stanford University, both of California, and Stanford University, San Jose, Calif. In addition, the Fund has published from time to time a very valuable bulletin on aeronautical progress. Reviewing the progress which has been done by the various departments of a large country of money, the committee acknowledges the Fund has, from the beginning, adopted the policy of rendering with the greatest air entry forward ship and as a result there is no doubt that Daniel Guggenheim's gift to aviation is destined to have a far-reaching and permanently favorable effect upon aeronautical progress.

It is hardly possible fully to appreciate the progress in all phases of aeronautics which has been made during the past year. And the prospects for 1927 are unquestionably very bright. The year just entered will undoubtedly see a firm and solid aviation program in both service and civil aviation built upon the above foundations already laid.

Pan-American Flight Starts

The Pan-American Flight, of the Air Corps, postponed a day because of inclement weather, started at 10:35 a.m. Dec. 21. Major Herbert A. Dargatzis led the first of five Lockheed Argonauts planes in the first plane "San Francisco." The machine was escorted from Kelly Field by two other planes, one of which was Major John M. Patrick.

Several times before being off for San Antonio the planes ended the field and then flew over the city and after which they landed at Fort Bliss, where they remained until they flew in the "San Antonio." The "San Antonio" was the "Detroit," and to the left of the "San Francisco," the "San Louis."

Just before the flight began, messages from Secretary of War Davis and Assistant Secretary of War for Aviation

Thos. E. Dorrance were received, wishing the "San Francisco" a happy landing.

At 5:30 p.m. Dec. 22, the planes landed at Houston Field, across the river from Thompson, in the first stop of the flight.

The planes had been expected at the field in the early morning, but a fog delayed their departure from Fort Bliss until the early afternoon of Dec. 22. The 300-mile journey was made in 3 1/2 hrs in the face of a strong headwind. Several thousand people were present when the planes landed, including officials of the Navy and Army and a reception committee of Americans headed by the American Consul. A banquet was tendered to the pilots during the evening.

At 5:30 p.m. Dec. 23, Capt. J. C. Baker and Lieut. M. D. Feltz, in the plane "San Francisco," arrived at Vera Cruz. This was the only one of the five planes that took off at Thompson to reach the former city. The "San Louis" was forced to land because of engine trouble and the others returned to the ground shortly after the start by order of Major Dargatzis.

The soft character of the ground at Houston Field made it difficult for the planes to take off. The "San Francisco" could not get the field with the others, but was not in the clouds before the signal bringing the other planes down was fresh. The "Detroit" made a forced landing in the river and was towed to the river mouth, from which place it was towed and returned to the field.

As soon as it became known that the "San Louis" had been forced to land because of a damaged engine, a Liberty engine and other spare parts were sent to Thompson from Duncan Field, San Antonio. Major Dargatzis dispatched a reference to the War Department office at St. Louis, where the "San Francisco" had proceeded to Vera Cruz, the other planes could start at Thompson and the "San Louis" was repaired.

Major Dargatzis, Captain McDaniel, Lieutenant Washington and Captain Baker, bearing President Coolidge's good-will message in President Coolidge's name, reached Mexico City by mail Dec. 25. They were met by Col. Edward Davis, with they attached to the American Legation, Major Harold Thompson, resident military attaché and Lieut. Colonel Donald Hamilton, the civil attaché. The Vera Cruz was celebrated as a hero by Colonel Davis and by General by Ambassador Stull.

In explaining his appearance from the rest of the planes at Thompson, Captain Baker said that engine trouble developed in his plane just as it was leaving and he worked the engine while Lieutenant Washington piloted the plane. Ten minutes after the plane took off he found that he had sufficient time only to reach Vera Cruz before night fell. He remained the other planes were ahead of him.



The first plane in every mail and under post office contract. The start of the Ford-Stout mail plane from Dulles with mail for Cleveland, Feb. 15.

The Development of the Curtiss Hawk

Curtiss Pursuit Planes for Army and Navy Developed Along Specialized Lines.

THE CURTISS Aeroplane & Motor Company, Inc., has developed the Hawk pursuit plane so that the new type is adaptable to many power plant installations and the plane's performance and maneuverability are unaffected. This was the idea that governed the engineering of the Hawk with a detachable engine mount, allowing for the quick replacement by one power plant with another.

Tests of service have proved the practicability of the basic type of D-12 engine Hawk, its use was by the U.S. Army and Navy showing the soundness of this theory. Four different power plant installations are now available in the Hawk, each giving plane being applicable to a special part of the Army and Navy pursuit program. The Curtiss D-12 Hawk is still the standard pursuit type of the Air Corps, but this branch of the service has also encouraged the development of lower powered Hawks for pursuit training. The Navy, while using the standard D-12 type, has also encouraged the production of an air-cooled Hawk.

The Gordon City plant of the Curtiss Aeroplane & Motor Company, Inc., is now completing a production order of P-12s. This is the latest Army modification of the D-12 Hawk. Of the more than 600 built on the earlier P-1 and P-1A, the P-12 incorporates many improvements and changes, suggested by the results of service tests. The old style tricycle type of propeller has been replaced by the R type of larger Curtiss-Beech model propeller. This new type of propeller increases gross efficiency and longer service and possesses all the advantages of the twisted type. The underside now radiator mounting has been changed so that there is less danger of ice and vibrations are absorbed. The radiator has been made longer and the shape changed to fit better into the fuselage lines. These changes have increased the speed of the Hawk by two miles per hour. The use of 32 in. by 6 in. wheels and tires in place of the 28 in. by 4 in. ones has greatly improved the landing gear, and the steel part has been fitted with an auxiliary ball-bearings, which is an advantage on rough or sandy fields. The landing gear has been extended well beyond the center of gravity to give the Hawk a better balance. A new and a reinforced landing gear has been installed to take the new power-boosted type instruments. A reinforced seat, a reinforced tail, and a change in the location of the throttle will add to the comfort of the pilot.

The Training Hawk

The present training plane, the AT-4, is another Army modification of the Hawk. One of these planes underwent extensive Army Air Corps tests, and is now under production at the Gordon City plant of the Curtiss Company, in 12 a production contract awarded by the Government. This plane is a P-12, with the exception of the power plant, a substitution of the 150 hp Wright engine having been made to replace the D-12 engine of 200-250 hp. The AT-4 is a splendid training plane, giving a fine performance and possessing an unusually high degree of maneuverability. As a modification of the basic Hawk type there is an assurance of low production costs in the case of the AT-4. The standard D-12 power plant can only and quickly be installed in the AT-4, thus saving the training plane to be readily converted into a fighter Hawk. A few AT-4s will be equipped with the 300 hp Wright model 2-4 six-cylinder engine, which will give the machine slightly better performance than that of the regular AT-4, but it will be identical in all other respects.

The Navy has now adopted the Curtiss Hawk, and there is a new construction at the Buffalo plant of the Curtiss Company, a quantity of the P-2C type. Heretofore, the Navy has used only low-powered fighting planes. Some of

the P-2C-7s are provided with the regular wheel type landing gear and others with a speed deck landing undercarriage. These are all equipped interchangeably with twin floats, which are furnished in pairs. These Navy Hawks are similar to the Army type with the exception of the landing gear and the aluminum float instead of the island float.

The Air-Cooled Pursuit

The Buffalo plant of the Curtiss Company is about to put into production another modification of the Hawk, which will be known as the Navy P-2C-4 type. The Navy has been assisting the development of air-cooled engines, because it believes that these are more suitable than the water-cooled powerplant for shipboard service. This has prompted the Pratt & Whitney Aircraft Company's development of the V-12, a 450 hp, wheel air-cooled engine. The installation of one of these engines in a standard Curtiss Hawk proved highly satisfactory.

The plane after normal flight in the West, was flown to San Diego, Imperial, Pinal, Reno to Seattle and back to Washington, D. C. The trip covered 7,000 miles, and was made in 40 hr flying time. No maintenance or other plane or engine was required during the trip. From all reports, the combination of the V-12 engine and the Hawk plane was very well liked by the operating personnel of the Seattle Fleet, and the production order issued.

Thus both the Army and the Navy have followed successfully the same program in their development of the Hawk during the past year. First, the refinement of the standard D-12 type for regular service use, and second, the modification of the basic type to meet problems peculiar to each service. Each in turn, in a position to benefit from the service experience of the other with the new basic machine.

A Radiator Manufacturer's Change

On Jan. 1, 1927, the Winchester Repeating Arms Company, of New Haven, will acquire the Radiator Division of the United States Curtiss Company. The United States Curtiss Co. has specialized in the manufacture of airplane radiator core and airplane radiator tubes, and previously all of the U. S. Army and Navy water-cooled planes are equipped with U. S. Curtiss cores.

The Winchester Repeating Arms Company plans to develop aggressively a market for airplane radiator and core and tubes. The entire radiator organization is being transferred from Lowell to New Haven, thus assuring the trade of the same high quality of workmanship and material that has always prevailed in the past. Harry E. Jackson will continue as Sales Manager of the Radiator Division.

Investigation of Air Pressure

Professor of Air on Coming to Rest from Various Speeds, forms the subject of report 287, by A. P. Zahm.

The test gives theoretical formulae from which is computed a table for the pressure of air on coming to rest from various speeds, such as those of aircraft and propeller blades. Pressure gauges are given for speeds from 1 m. sec. up to those of jet projectiles.

The present investigation, slightly modified, was prepared for the Bureau of Aeronautics, Navy Department, Feb. 17, 1926, and by it was submitted for publication to the National Advisory Committee for Aeronautics.

A copy of this report may be obtained upon request from the National Advisory Committee for Aeronautics, Washington, D. C.



The Navy Curtiss air-cooled engine Hawk P-2C-4. The engine is the 450 hp. Pratt & Whitney V-12.



The basic type of Hawk pursuit plane, the Army Curtiss P-12, developed from the P-1 and P-1A. The engine is the Curtiss D-12, 450-500 hp.



The Hawk airplane. The Navy Curtiss P-2C-4 pursuit plane is another development of the P-1. Also in the P-12 the engine is a D-12.



The Army's advanced pursuit training plane, the Curtiss Hawk AT-4, which is a P-12 pursuit plane equipped with a lower powered engine, the 150 hp. Wright.

In the matter of air mail, extensive efforts are being made to reduce the cost of transporting mail by air and to increase the speed of delivery. The United States Postal Service is now operating a mail route between New York and San Francisco, and is planning to extend this route to other cities. The Postal Service is also planning to increase the number of mail planes and to increase the speed of delivery. This is being done by increasing the number of mail planes and by increasing the speed of delivery. This is being done by increasing the number of mail planes and by increasing the speed of delivery.

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Parasites

Work during the past year has been directed primarily in increasing the size of parasitic animals. The size of the parasite is being increased by increasing the size of the parasite. The size of the parasite is being increased by increasing the size of the parasite. The size of the parasite is being increased by increasing the size of the parasite.

Lighter-than-Air

The lighter-than-air activities of the Bureau were, as is pointed out in the report, a very important part of the work of the Bureau. The lighter-than-air activities of the Bureau were, as is pointed out in the report, a very important part of the work of the Bureau. The lighter-than-air activities of the Bureau were, as is pointed out in the report, a very important part of the work of the Bureau.

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Financial

For the fiscal year 1927 the appropriation bill provided for the same amount as the previous year. For the fiscal year 1927 the appropriation bill provided for the same amount as the previous year. For the fiscal year 1927 the appropriation bill provided for the same amount as the previous year.

This year represents an increase of approximately \$100,000 over the previous year. This year represents an increase of approximately \$100,000 over the previous year. This year represents an increase of approximately \$100,000 over the previous year.

With these increased appropriations a decided improvement has been made in the matter of transportation. With these increased appropriations a decided improvement has been made in the matter of transportation. With these increased appropriations a decided improvement has been made in the matter of transportation.

Conclusions and Recommendations

As a result of investigations conducted by the Congress and by the Department of Commerce, it is recommended that the Department of Commerce should be authorized to increase the number of mail planes and to increase the speed of delivery. As a result of investigations conducted by the Congress and by the Department of Commerce, it is recommended that the Department of Commerce should be authorized to increase the number of mail planes and to increase the speed of delivery.

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Atlanta-Miami Air Mail Suspended

Temporary suspension of contract air mail service on the route between Atlanta, Ga., and Miami, Fla., has been authorized by Postmaster General Blair and business officials at the time of business on Dec. 31.

Under agreement with the Florida Airplane Line, operations of this route, the service was to be suspended until the proposed trunk line route from New York to Atlanta is placed in operation and letters are set up on the Florida route so that a schedule of night operations may be placed in effect.

Service has been suspended on the Florida route for the past three months with consistent regularity but, owing to the lack of light for night flying and the resulting necessity of daylight operations, the airplane has not proved attractive from the standpoint of mail carrying.

Although the Department has paid the contractor more than was received in postage receipts, the line has not been meeting operating expenses. Hence, it was agreed that a low bid to the contractor and the Post Office Department, the department agreed to the suspension.

With a night schedule that will permit of greater time savings over ordinary mail sent, operating in connection with the proposed trunk line that will run from Atlanta and Miami to New York for Boston and New England points, it is believed the Florida route will prove a success.

New York-Atlanta Night Air Mail

Postmaster General Blair has announced that bids will be opened on Feb. 25, 1927, for the proposed New York to Atlanta contract. The route is to be operated by the Florida Airplane Line, which is now operating on the New York to Miami route.

The Department reserves the right to increase or decrease the number of intermediate stops and the number of mail trips per week and to change the terminal of the route by agreement with the contractor.

The route is to be operated by the Florida Airplane Line, which is now operating on the New York to Miami route. The route is to be operated by the Florida Airplane Line, which is now operating on the New York to Miami route.

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Flying over the route will be done entirely at night. The tentative schedule arranged provides that the plane shall depart from New York at 5 p.m. each evening, reaching Atlanta at 4 a.m. the next morning.

The complete schedule as arranged is as follows: Leave New York 9 p.m., Leave Philadelphia, 8:40 p.m., Leave Washington, 11:14 p.m., Leave Richmond, 12:35 a.m., Leave Greensboro, 2:28 a.m., and arrive at Atlanta 9 a.m. The same schedule will prevail on the New York trip.

The Atlanta stage way is approximately 775 miles and the contractor will be paid ten cents per half hour for carrying the mails over this route.

The Department of Commerce has informed the Post Office Department that the proposed route will be looked up as soon as the appropriation for the purpose is made available.

Company Lifts Air Insurance Restrictions

The Travelers Insurance Company, of Hartford, Conn., announced last week, effective Dec. 1 and thereafter, it will pay indemnity on the earliest policies without the additional high premium annexed in the past to cover air hazards. This allows equity pay out of the company's present accident policies, covering any kind of airplane while the insured is flying as a passenger in a licensed passenger plane or airplane operated by a licensed pilot upon a regular passenger route between definitely established airports.

In making the announcement, H. A. Pope, vice president of the Travelers Insurance Company, said the company's flight and aviation coverage of 1925 is proving that commercial flying is no longer an experiment and says that actual losses considered by the company revealed that the dangers in flight and back, commercial aviation, are not as great as they are much greater than those encountered by automobile as passengers.

The restriction still apply, however, is liability insured by a military or naval plane or simply or while the insured is either a pilot or mechanic on a plane.



THE FOKKER TRIMOTOR PLANE OF THE BYRD NORTH POLE FLIGHT
Powered with two Wright Whirlwind Engines
Equipped with

SCINTILLA

Aircraft Magnetos

SCINTILLA MAGNETO COMPANY, INC.

Contractors to the U. S. Army and Navy.

SIDNEY, NEW YORK

The Department of Commerce Issues Final Civil Air Regulations

A Resume of the Regulations Which are to Govern Civil Air Activities.

THE DEPARTMENT of Commerce has just issued the final draft of the regulations governing commercial aviation and these regulations become effective on Dec. 31, 1926. The complete document is of such importance that every flyer will find it necessary to obtain a copy and aviation will only attempt to give a synopsis of the principal clauses.

This is the third time the regulations have been drafted. The first draft was widely distributed and commercial aviation was held in Washington in order that the views of flyers and the various branches of the industry might be obtained. Special conferences were held for manufacturers, airlines operators, aerial service operators, aeronautics groups, and publishers. As a result, the originally suggested regulations were greatly modified and simplified. Assistant Secretary of Commerce MacFarlane, in a statement at the hearings, adopted a very broad-minded attitude and endeavored to be led by what seemed to be the general consensus of opinion regarding the most desirable clauses. The second draft of the proposed regulations was not so widely distributed but the Aeronautical Chamber of Commerce approached a committee to consider these revised regulations and found only four or five clauses which it considered should be modified. The Department of Commerce has incorporated several of the suggested changes in the final regulations but no other points they were held firm.

The regulations are the result of the "Air Commerce Act of 1926," which was drawn up "to encourage and regulate the use of aircraft in commerce, and for other purposes." The bill placed the regulation and encouragement of commercial aviation under the Department of Commerce. Due to constitutional limitations on the Federal Government the law and, therefore, the regulations, apply only to interstate commerce, or the operation of aircraft for profit between states. The Federal Government does not attempt to regulate flying within the boundaries of a state nor does it regulate pure private flying between states, where such flying is not of a commercial nature. The only clause which affects flying within a state is that which requires every plane to have a number painted on the underside of the lower wing and a small marker on the side of the fuselage.

Licenses and Log Books

The main provision of the regulations is that which requires the registration of all planes and is "Air Commerce." After planes have obtained aircraft certificates. This latter calls for both structural analysis and flight inspection. All pilots who fly registered aircraft are given licenses for which preliminary written examinations, in addition to a demonstration of ability as pilot in command, are necessary. The regulations define air traffic rules and the necessary signals which should be displayed at night. Log books and periodic inspections are required. All new airports, all airplanes after a major crash and all planes where the struc-

ture has been modified must be flight tested before an inspector permits to them being licensed. The Government inspectors will have the right to inspect all licensed planes at any time. The inspectors will use planes in traveling to and from the various fields where inspections are to be made.

Planes Requiring Licenses

According to the regulations, the airplanes which must be registered and for which licenses must be obtained are those:

- (1) between two or more states, or to or from foreign countries, or from Alaska to Hawaii, etc., or from New York, or Portland, Maine, or Chicago, Illinois.
- (2) between the points in one state if a part of one flight is not within state, or from Buffalo to New York, the Rochester, N. Y., or from Dallas, Texas west past of Pennsylvania, and from Kansas to Florida.
- (3) between two points in one state if it is a part of a through service between points in different states or from Mexico to Los Angeles in the Pacific, etc., or as a part of the service between Los Angeles and Mexico, etc., or from San Antonio, Tex., to Los Angeles, Tex., as a part of the service between San Antonio and Houston, Texas.
- (4) within the airspace over the District of Columbia or any other or portions of the United States.
- (5) in foreign interstate planes in different states, the District of Columbia, or portions of the United States, or by or from any foreign country.
- (6) for the operation in the service of a business as an aircraft of the United States, or the District of Columbia and is flown to another state, including all airplanes, the use of the facilities in one state, directly or indirectly, applied to interstate flight, is before the aircraft is used in that state. It is prohibited, therefore, for the carriage of persons or property for hire or for the carriage between points or property for hire or reward.

Foreign Aircraft

The regulations further provide that "Flyers who aircraft of the United States are permitted to fly to or over a foreign country without registration and being and licensing of their crews, the aircraft of such foreign country, and a part of its armed forces, and the aircraft serving in connection therewith, only operate in the territory over which the United States has jurisdiction, without licensing. Such foreign aircraft shall not engage in interstate or intrastate air commerce."

Obtaining Licenses

An aircraft will not be licensed and it has been registered and found airworthy. Only planes owned by a citizen of the United States or by a corporation controlled by American citizens may be registered and they must not be registered under the laws of any other country.

"For airplanes constructed prior to July 1, 1927, and found by the Secretary of Commerce to be of proper design, security and workmanship, and of suitable materials and equipped in accordance with these regulations, aircraft in-

We GUARANTEE To Teach You To FLY

EVERY STUDENT A PILOT—NO CLASSES—INDIVIDUAL INSTRUCTION

CONTRACT

FOR COMPLETE EAGLEROCK FLYING COURSE

THIS AGREEMENT entered into this _____ day of _____ 19____

between _____ and the BENNETT EAGLEROCK SALES CO.,
Bennett Flying School, Kansas City, Missouri

For the sum of \$500.00 _____ Cash in hand receipt of which is hereby acknowledged.

THE BENNETT EAGLEROCK SALES CO. agrees to give the student _____

_____ the following flying instructions, booklets, take-offs and instruction, totaling 15 hours, one of which shall be solo. (Student must progress to the point of solo, after which time he will be given 1 hour solo flight). All instruction shall be given on Eaglerock or other modern airplanes in good flying condition. All instruction by competent pilots experienced in giving instruction in the art of flying.

All instruction in ground school, water proofing; recording, reloading and repairing of airplanes free. The surprise of some student will receive a certificate duly signed by Instructor and President of Company, attesting to number of hours in air and ability as a flyer.

Student agrees to take instruction at such time and as often as instructor deems advisable.

This field is under Government Supervision, used by Army and Air Mail.

CANCELLATION—This Contract may be terminated by the BENNETT EAGLEROCK SALES CO. for inactivity or lack of diligent application on the part of student. All tuition in excess of \$15 per hour shall be returned to student and this contract shall be null and void.

Students desiring to discontinue the course may do so by notifying the President in writing after which, tuition in excess of \$20 per hour will be refunded.

Students expelled for drinking, gambling or other unwarrantable conduct will be assessed \$25 per hour for time already given.

This contract shall be binding on both parties when signed by student and the President of the BENNETT EAGLEROCK SALES CO.

BENNETT EAGLEROCK SALES CO.

Down Town Office 223 West 12th Street, Kansas City, Mo.

President

Student

Official Representative

FILL IN THE ABOVE CONTRACT AND MAIL WITH DEPOSIT OF \$100.00. STUDENTS WILL BE ACCEPTED IN ORDER IN WHICH CONTRACTS ARE RECEIVED. WE GUARANTEE SATISFACTION.

WHY WE CAN OFFER YOU THIS LIBERAL CONTRACT

WE OPERATE RICHARDS FIELD, USING SAFETY FIRST EAGLEROCK AIRPLANES. OUR PILOTS HAVE HAD YEARS OF EXPERIENCE GIVING FLYING INSTRUCTIONS.

We furnish Free Transportation to and from field. Good board and room can be obtained for \$7 to \$8 per week.

"EAGLEROCK" the only Airplane good enough to sell on Time

—Ask about our Time Payment Plan—



A lineup of commercial planes (left) with the new Eaglerock (UX-1) three-place plane in the middle.

figures of eight around pylons, outcrossing themselves, and cross-country flights of more than 300 miles, unless the pilot can prove that he has made such a flight within a year. The candidate must provide the place and the authorities at the place and date for the test.

The Private Pilot license test requires only knowledge of air traffic rules, the making of five figures of eight turns and three outcrossing full stop landings. Licensees will be required to pass physical examination only, if the Transport Pilot was less than 30 years of age, 30 days, the Instrument Pilot 30 days within one year and the Private Pilot 30 days within a year. Otherwise the actual flight test must be passed through for the respective classes.

Modern license will require a knowledge of internal combustion engines and their controls, and engineless steering and avoidance. The regulations will be both theoretical and practical and the candidate must obtain an average of at least 75 per cent. The license will last two years and will be renewable if the applicant has practiced the trade for at least half the period.

License may be revoked for violation of the regulations or air traffic rules, for serious physical condition or on the possession of intoxicating liquor while on duty.

Air Traffic Rules

Complete air traffic rules are laid out. Applicants taking of exams give way to those landing, airplanes taking give way to airplanes and airplanes to balloons. Aircraft whose position must keep to the right of an aircraft. Three-headed feet is the minimum distance within which one aircraft may pass another. The aircraft having the right of way must give way. When two aircraft are approaching head on, they both keep to the right. The ascending aircraft must avoid the craft that is passing by keeping to the right and not by altering its altitude.

When flying over congested areas, the altitude must be sufficient to clear a reasonably safe emergency landing being made and must not be less than 1,000 ft. Moreover, an altitude of 500 ft. must be maintained except, of course, for landing or such operations as crop dusting, etc. Special

limitations are put on flying over crowds, especially in the case of stunt flying. No landing is allowed to be done where emergency landings (these regulations, it must be remembered, apply only to licensed pilots).

Licenses must follow the laws governing water craft when on water, or addition to the air regulations. Landings, when possible, must be made against wind, and airplanes must continue on a straight course when within a thousand feet of the airframe. The landing machine has the right of way over planes on the ground and over planes at a higher altitude. Provision are also made for lights on aircraft flying at night and a standard of distress, weather and field markings is laid out.

Penalties

Under the provisions of the law, violation of the regulations is punishable by fines and penalties mostly in the shape of fines not to exceed \$500. Violators will be reported by the Government inspectors and the Secretary of Commerce will notify all persons of the existence of such penalties and the persons charged with the penalty may transmit to the Secretary of Commerce two copies of an affidavit stating the facts upon which the penalty was incurred, with a request for mitigation or remission. The Secretary of Commerce will then determine whether or not the penalty will be mitigated or remitted, and the persons making the request will be notified accordingly. The Secretary of Commerce may vary any of the requirements of these regulations when in his discretion, the public facts justify such action.

Finally, it is noted: "These regulations shall take effect midnight Dec. 31, 1926. Aircraft and engines subject to these regulations may continue to operate without a license until July 1, 1927, if the application for the license is filed with the Secretary of Commerce prior to March 1, 1927, and the Secretary of Commerce has not acted thereon."

The regulations cover fifty manuscript pages and it has been impossible to reproduce this document in full. The text is now available and it is extremely difficult to summarize the regulations without leaving out important details or perhaps violating the meaning. It is hoped, therefore, that all members of AVIATION will obtain copies of and study the regulations.

Canadian Vickers Air Activities

The Canadian Air Board has decided to standardize on the Siskin 140 as the power plant for its aircraft. The 140 is an eight-cylinder radial engine of seven cylinders, developing 160-180 hp and is built in England by Armstrong Siskin Ltd. As a result, the two-engine flying boat Vickers and the single-engine pusher boat Vickers are having their engine beds redesigned to fit the new engine. This work is being done by the Canadian branch of Vickers Ltd. which is located at Montreal. Work on the Vickers is starting soon. This plan is a general purpose aircraft engine with a novel form of cylinder housing which requires no wires. Canadian Vickers are also producing a single-engine monoplane aerial bus flying boat which will be fitted with a Siskin 140 of 50 hp. In addition, work has been started on a two-engine amphibious airplane which can also be fitted with Vickers 140s. A single-engine forest patrol plane for use on either land, water or snow is also under way.

Proposed Air Mail Service in Canada

The discussion of plans for an air mail service in Canada at the Imperial Conference, held in London, England, has ended much interest throughout the Dominion.

The special features of the proposed service are the making of services from Arthur Point, Que., just above Rimouski, to Montreal, Que., and thence to other points. In the winter months, mail could be received from Halifax, N. S. and St. John, N. B., winter ports, in Montreal, Que., and Toronto, Ont.



Travel Air Announces REDUCED PRICE on OX-5 Model

Now \$2785

AT this time, the close of our second year, we are pleased to announce this substantial price reduction on our regular OX-5 plane, effective at once.

There is to be no wavering from the high standard of Travel Air quality, each plane being guaranteed to conform to Aeronautical Safety requirements.

The lower prices are made possible by volume production, for truly the 1926 achievements of Travel Air planes have necessitated an expanding production schedule.

Watch Travel Air development in 1927 from the cockpit of YOUR OWN Travel Air.

Ask for latest catalog and new price list. Gladly sent on request.



The Johnson Twin-60 Airplane

A New Two-Seater Twin-Engine Lightplane for Commercial or Private Flying.

THE JOHNSON Twin-60, a twin-engine low-powered commercial and private carrying two-seater airplane, has been produced by the Johnson Airplane and Supply Company of Dayton, Ohio, to fulfill what this organization, which has had extensive experience in the demands of civil aviation, considers to be the requirements for this type. The machine appears to be designed along somewhat radical lines but incorporates many most desirable features. The Johnson company has been led to the conclusion that, in order to ensure reliability in operation, at least two engines are necessary in a machine of this type and it is the opinion of D. Earl Bentley, vice-president and chief engineer of the company, that a machine of two engines which can maintain altitude on any one engine and is not so unbalanced in place is superior, and he appears to have proved his point in his latest design. The machine is equipped with two 32 hp. twin-cylinder Church air-cooled engines.

Another important consideration was that of visibility and comfort in the cockpit of the plane. These two requirements led to the adoption of a pusher type of machine. The result of all this thought and development work has been the production of a commercial plane of somewhat novel features when viewed in the light of machine practice, but resulting very clearly in general details some of the early pusher airplanes.

Construction

The structural details of the Twin-60 are orthodox. The wings are of wood construction, the bones being rooled square with ribs of plywood. Warren type trussing is employed. The trailing edges of the wings are formed of tubing. Ailerons, of large size, are fitted on all four wing tips with control cables passing through the lower wing, the lower ailerons being connected to those on the upper wing tips by means of streamlined struts. Ribs bearings are provided for the control cables. According to the manufacturers, no differential control between up and down operation of the ailerons is necessary owing to the pusher character of the wings.

The fuselage structure is entirely of welded steel tubing, no wires or fastenings being employed, with the result that the framework is very rigid and safe for its future adjustment.

There is a side door provided for ease in entering or leaving the plane and the structure is strengthened under this door by means of a girder.

The two cockpits, in tandem, are very roomy and give excellent visibility due to their position. There are no control wires exposed in either cockpit, these being enclosed inside the control and rudder. Dual control is provided, with facilities for the removal of the control mechanism from either cockpit. A feature of the control system is the wheel brake. Brake pedals are provided connecting the brake on each wheel individually.

Individual Engine Units

The engine instruments are located on their respective engine mounts, and are close enough to the pilot to be easily read from his cockpit. This form of location of engine instruments eliminates the complication of long shafts and tubing systems which add considerably to the possibilities of trouble being experienced. The throttle controls are installed in such a manner as to prevent either being opened while under normal conditions but arrangements are provided whereby the throttle may, if need should arise for full power, be opened to their fullest. The throttles are situated on the left side of the cockpits and the engine may be controlled separately or in unison.

The tail surfaces are of welded steel tubing construction. The entire span of the machine is within the combined propeller span, and as will be seen, two rudders are provided, each being balanced. It is reported that the control of the plane is very light and easy and yet the machine has the feel of a large heavy plane, though small effort is required to secure quick response. The makers are of sufficient size to make time to either side being made on one engine.

The new Johnson design has wheels are fitted with a straight axle type of landing gear. The transverse bracing and brake control bar is in the place of the rear undercarriage struts, the forward struts being provided with compression rubber shock and shock absorbers. The wheel brakes are of special Johnson design and may be operated by the pilot in unison or, as already mentioned, individually. The new Johnson brake clamps the wheel so it is safe and is free from

The 1927 SWALLOW

AMERICA'S FINEST COMMERCIAL AIRPLANE

Designed by W. M. Stearman



\$2,485 - OX5
At Factory

The oldest manufacturer of commercial airplanes in America announces a new 1927 model. This airplane is equipped with split axle landing gear, new Hartzell propeller, adjustable stabilizer, streamlined wings and has a reinforced steel fuselage. The high factor of safety is maintained with any motor up to 220 hp. Both cockpits are fully upholstered and have comfortable seating arrangements. The 1927 Swallow has no competition in quality and performance at low cost. It reflects the stability of a dependable company.

Watch Swallow Influence on All Airplanes for Years to Come

SWALLOW AIRPLANE MFG. CO.
WICHITA, KANSAS

Agents Wanted

DISTRIBUTORS

W. H. Royle
304 Franklin Bldg
Oakland, California

Burden Feller
9401 S. Western Ave.
Los Angeles, California

R. G. Morris
Lexington, Nebraska
A. B. McCallum
15 Peach Tree Arcade
Atlanta, Ga.

Brick & Browning
P.O. Box 1362
Wichita Falls, Texas

George Taborian
Kalamazoo, Mich.
F. L. Bernhard
1752 N. Toluca Ave.
Chicago, Ill.

Davenport Airport Co.
Davenport St. & Dock Creek
Davenport, Iowa



A front-view front view of the Johnson Twin-60 two-seater commercial plane (two Church 32 hp. engines)



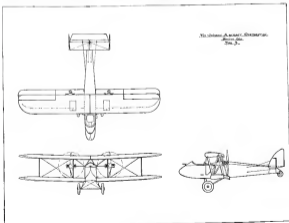
Another view of the Johnson Twin-60 (see Church 32 for engine)

brake, levers, drums, etc. The brake is readily fitted to any type of landing gear, and is adjustable so as not to trip the plane up when landing.

In view of the fitting of brakes on the undercarriage, it was considered that there was no necessity to explain the customary tail wheel and, accordingly, this has been observed in favor of a small tail wheel. This wheel operates in any direction and is mounted on compression roller shoes. As a result of this arrangement, one man is able to manipulate the

plane on the field and it is said that the tail wheel enables a quarter take-off and greatly reduces the strain on the landing structure in landing.

The engines, as already stated, are Bristol Cherub 35 hp. two-cylinder units. They develop the power at 2800 r.p.m. and run up to 3200 r.p.m. developing 35 hp. These engines have proved their reliability and endurance in operation both in this country and in Europe and the Johnson company is in a position to supply spare and spare service to all users of



Correct layout drawings of the Johnson Twin-60



AIR-KING

Greater Strength — with Lighter Weight

Duralumin (with the strength of steel) and only one-third the weight) is the foundation of this wonderful plane.

Add to this the Duralumin tail group that weighs but thirty pounds; the trussed tube fuselage with no wire rigging to add weight and need adjusting; the Duralumin tube with balsa wood streamline struts that cut down weight, too; the extra strong, shock absorbed landing gear with no heavy winding system; the entire ship streamlined from nose to tail spring tail skid—and no wonder the "Air-

King" makes such quick take-offs, fast climbs and good landings.

Even though the "Air-King" weighs but 1,095 pounds empty, it is not a small ship. Wing area is 300 square feet; useful load is 850 pounds, 26 feet long, 8-2/3 feet high and with a 33 foot span it is just the right size ship for small landing fields, commercial work, student training and pleasure use.

Its price, too, is as great a surprise as its mechanical superiority. Find out all about this far-in-advance "Air-King". Address



Write for
catalog, specifications,
structure price today.

NATIONAL AIRWAYS SYSTEM, LOMAX, ILL.

The Bull's Eye Bailey 140 HP. Engine

A New Seven-Cylinder Air-Cooled Radial Engine for Commercial Airplanes. The Engine is Exceptional for its Simplicity.

THESE HAS long been felt a demand for an airplane engine of 130-150 hp. for commercial and other classes of civil flying. It was one of the power plants in the Bull's Eye Bailey engine which, while it has only very recently made its appearance, is already fulfilling its purpose and showing its reliability.

The Bailey is a seven-cylinder, air-cooled radial engine with a bore of 5 1/2 in. and a stroke of 5 1/2 in., developing 140 hp. at 2850 r.p.m. and weighing only 385 lb., mounted and ready to run. This, it will be seen, represents 2.5 lb. per hp. Of the many outstanding features of this engine, probably, the most important and the one making it particularly adapted to commercial use, is its extreme simplicity. The engine, measuring only 31 in. in diameter, contains only 78 moving parts, mounted in a three-piece envelope of heavy aluminum stock with all joints ground, eliminating entirely the use of gaskets.

Simplified Valve Action

A particularly interesting detail regarding the engine is the "L" head valve action, which not only eliminates the complicated overhead valve mechanism, but makes possible the shaping of the aluminum cast cylinder head, thus increasing the cooling area of the cylinder to a marked degree. The "L" head principle shows an experimental over the valveless head type in making possible the fitting of the valve in a direct line of flow from the cam.

The cylinders are cast of semi-die, heat treated, and with the exhaust and intake ports on the rear, mounting as even cooling of the valve. The cooling flanges are exceptionally deep and are responsible for the cool operation and low oil

consumption of the engine. The pistons, which, during the experimental stages of development, offered a problem, carry four rings and are made of a special alloy, but not brittle, alloy, weighing only 2 1/2 lb. each and have undergone tests far more severe than could be subjected to actual operation.

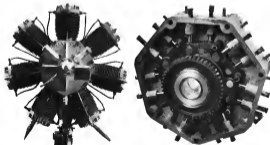
Main Bearings

The connecting rods and master rod are of chrome-nickel steel, with master rod bearings of the conventional ball-and-socket type with a length of 5 1/2 in. The chrome-nickel mainshaft is of the two-piece variety and also of same bearing size of the ball-and-socket type with a length of 4 in. The large bearing surface is responsible for the complete absence of any bearing trouble during tests of the engine under an exceptionally low oil pressure.

There are only seven gears in the entire engine, namely, four timing gears, a magneto drive gear and two magneto gears. All gears are of the simple spur type. The magnetos are placed parallel to the crankshaft, instead of at right angles to it, making possible a type gear back-up and eliminating the use of magneto couplings. This arrangement places the two Bosch magnetos to the rear of the engine, under the cooling and out of the weather.

Flight Tests

During the process of development, the engine underwent a series of the most severe tests, including a destruction test. And, finally, after a thorough check test, it was mounted in a Waterbury Standard biplane, and on Oct. 15, was flight tested, its performance exceeding all expectations. During



The Bull's Eye Bailey 140 hp. air-cooled engine. On the left, a front view of the engine. The photograph above shows the internal valve operating part.



The Five Army-Loening Amphibian Planes now circling Central and South America on a flight of 18,524 miles

are equipped with

STANDARD STEEL ADJUSTABLE PITCH
ALL METAL PROPELLERS



One of the Army-Loening Amphibian of the Five-Continents Flight, powered with standard Liberty Engines equipped with Three-Bladed STANDARD STEEL PROPELLERS.

During 1936 many new military, naval, air mail and commercial planes were added to the list of STANDARD STEEL PROPELLER Equipped Aircraft.

Standard Steel Propeller Company
Pittsburgh, Penn.



The Waterhouse biplane equipped with the new Bell's Eye Radio was captured while en route, Jan. 10.

these tests, the following performance was obtained with a load of 1,000 lb. and passenger and 27 gal. of gasoline:

Time to 10,000 ft. 1:00
Maximum speed in level flight 100 m.p.h.
Climbing speed at 10,000 ft. 100 m.p.h.
Climbing speed at 10,000 ft. 100 m.p.h.
Climbing speed at 10,000 ft. 100 m.p.h.
Average power consumption at 10,000 ft. 100 m.p.h.

Time of consumption in 10,000 ft. 100 m.p.h.
This performance not only is excellent for an engine of this weight and power, but speaks very well of the thorough Waterhouse biplane.

Air Patrol Vital Part of Forest Service

A report has recently been submitted by the Commanding General of the Ninth Corps Area, San Francisco, Cal., an aerial forest fire patrol operation on the Pacific coast during the past summer. It states that it is interesting to note from the number of very different remarks of the various patrol pilots regarding reports that the various possibilities of the patrol plane are being discovered and used more and more by the Forest Service each year.

In the operation of the forest patrol during the month of June to September, inclusive, a total of 245 new fires were discovered by airplane observers. In the total of 356 patrol flights made, covering 35,476 ft., an average of approximately 17,142 ft. per hour was observed. Patrols were maintained at Sacramento, Col. Spokane, Wash.; Hatcher Field, Sacramento, Cal.; Griffith Park, Los Angeles, Cal.; and Red Bank, Wash. An average of eight airplanes were in continuous service during the forestry patrol season. The flying time totaled 1,509 hr. and 32 min.

In addition to its aerial fire fighting work, "scouting" and reporting new fires, reconnoitering and mapping old ones, the patrol plane was used to photograph points of possible interest to the Forest Service, to map suspected areas of forested lands, to make aerial surveys of local navigation through National Forests and, in some instances, to cooperate with land authorities in an experimental attempt to locate the body of a young man who was drowned in Donner Lake, Cal., after having rescued some persons from drowning.

As an instance of the airplane in fire detection, the follow-

ing is quoted from a report submitted from the Bend Pilot House:

"Lookout Southwest of Chalkville made several reports of a fire located on a known canyon and estimated distance. Men were sent through the territory in which the fire was supposed to be, but could find nothing. The lookout was so certain that there was a fire that a plane was sent from Spokane.

"We flew over the canyon given and returned by wide loops as we were able to look directly down on a strip of country at least 10 mi. wide and covering all of the known canyon points. We looked all possible angles for the smoke and the fact that we could not find even the smallest fire was positive assurance that the large fire reported by the lookout really did not exist.

"The new work accomplished by a ground reconnaissance would have cost a great deal more and would have required much more time. It seems that work of this character, definite evidence, are supplied by the use of airplanes."

Committee to Award Collier Trophy

Peter Adams, President of the National Aeronautics Association, has announced the appointment of the following committee to award the Collier trophy for the year 1936: Dr. H. W. Pratt, Dr. George W. Lewis, Earl S. Plesley, F. G. E. Brown, and Carl P. Rohrer.

This trophy was donated in 1913 by the late Robert J. Collier, and the award of it will probably that it is to be awarded annually by the National Aeronautics Association for the greatest achievement in aviation in America, the value of which has been demonstrated by actual use during the preceding year.

It will be remembered that in 1935 H. H. Arnold had won the award for the development of a world airplane prototype. The committee will meet in Washington during the month of January to make the award, and all applications in this connection should be submitted to the National Aeronautics Association, 2075 H. Street, N.W., Washington, D. C., together with affidavits of the supporting testimony on or before Jan. 15, 1937.

American Aircraft Directory

Many expenses have been retained by America for information regarding state laws, municipal ordinances, commercial pilots, airports and aircraft operations throughout the United States. To meet the demand for the American Aircraft Directory will be published in 1937 in book form with many maps, illustrations and advertisements. At many of our readers wish the information contained in this directory will be published each week, the data which has been retained in this.

It is expected that many additions will be made and our readers are requested to send any corrections, additions or suggestions that they may have. Copyright, 1937 by American Publishing Company.

ARKANSAS

Pilots and Operators

ALIX

John Allen, c/o Alex George & Machine

SHAW

J. V. Hensley, c/o Camden Auto Depo-

CLAYTON

J. H. Conall, 604 Baltimore Avenue.

WELLS

J. B. Mosley, Jr., 522 Butler Street.

LITTLE ROCK

J. C. Cox, Jr., Deputy Secretary of

State.

Harvey Hall, A.D.U.W. Building.

O. S. Rogers, 1112 West 2nd Street.

Little Rock Aerial Co.

MONTICELLO

W. H. Williams

HELENA

R. M. Nelson

NORT LITTLE ROCK

W. H. Horn

CLAYTON

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Location: 100 ft. S. of postoffice.

Description: 1,000 ft. E. and W. by 1,000

ft. W. and S. north.

Facilities: All accommodations.

PINE BLUFF

FLYING FIELD

Location: 100 ft. S. of postoffice.

Description: 1,000 ft. E. and W. by 1,000

ft. W. and S. north.

Facilities: All accommodations in city.

AERO ORGANIZATIONS:

See Blue Chamber N.A.

O. H. H. Smith, 213 W. 2nd St., Pres.

Hugh Hensley, 1501 W. 2nd St., Sec.

CALIFORNIA

Pilots and Operators

ALHAMBRA

Charles F. Clark, Neptune Beach.

HELENA

R. M. Nelson

NORT LITTLE ROCK

W. H. Horn

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J. B. Mosley, Jr., 522 Butler Street.

CLAYTON

J. B. Mosley, Jr., 522 Butler Street.

LONG BEACH

Earl S. Plesley, 420 E. Seaside

St.

Usher Beach, 425 American Ave.

O. W. Tamm, 4623 Elmer St.

LOS ANGELES

American Air Commerce Corp., 2038

Stearns St.

Philip S. Brown, 2505 West 25th Place

Charles Brown, 701 West 2nd Place

Lyons Brown, 412 West 2d St.

J. H. Hays, 1601 E. Western Ave.

Arthur Cullen, Berkeley Airport, 1046

St. & Western Ave.

Earl P. Cullen, Berkeley Airport, 1046

St. & Western Ave.

Joseph A. Davis, 1624 West 25th St.

Dover Airport

Monte Edwards, 1601 E. Western Ave.

C. W. Edwards, 1601 E. Western Ave.

Don Frye, 1601 E. Western Ave.

Jack Frye, 1601 E. Western Ave.

Art Gabel, 1601 E. Western Ave.

Walker A. Hall, 1601 E. Western Ave.

Monte Laffey, 1601 E. Western Ave.

W. H. Hays, 1601 E. Western Ave.

George Hays, 1601 E. Western Ave.

John L. Hays, 1601 E. Western Ave.

Harry D. Lombard, 4623 West 2nd St.

See MacDonald, 1601 E. Western Ave.

Alfred MacDonald, 1601 E. Western Ave.

A. P. Martin, 1601 E. Western Ave.

W. A. Martin, 1601 E. Western Ave.

H. H. Maynard, 412 West 2d St.

Robert J. Merrill, 1601 E. Western Ave.

Edward Hays, 1601 E. Western Ave.

Paul Hays, 1601 E. Western Ave.

Jack Hays, 1601 E. Western Ave.

James Hays, 1601 E. Western Ave.

Shore Hays, 1601 E. Western Ave.

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AIRPORTS AND AIRWAYS

Fuller Field, St. Petersburg, Fla.

By H. D. Dumas

A. B. Bradley, city attorney of St. Petersburg, and president of the St. Petersburg Aero Club, announced that \$50,000 will be spent on the municipal airport within the next year, the expenditure chiefly to apply to the creation of a passenger station, hangars and lights for the airport.

From April 1, when the C.A.M. No. 16 was inaugurated, to Nov. 24, when the flights of L. S. Elin, from Atlanta to Tampa, and S. K. Kelley, from Tampa to Atlanta, were completed, the Florida Airways planes had flown 225,000 mi.

The incoming passengers of air travel in the South was shown when "Eggs" (Ed) Smith, well-known cricketer, on Dec. 1 made a flight from Jacksonville to Fort Myers, via Tampa, to hold a special meeting. Smith also had joined the air travelers, Max Sam Reinken, of Tampa, and Miss Margaret Coffin, of St. Petersburg. 1936 debuts, being listed among the November air passengers of the Florida Airways.

The Company's plane No. 4 served the first mail between Tampa and St. Petersburg on Thanksgiving Day, when 234,000 letters, the majority sent by the postmasters of the two cities, were carried to the field during the delivery.

Miami, Fla.

By Earl M. DeLeon

A. B. Chalk has opened the Winter flying season at Miami with a new Waco F equipped with Edo planes. The Chalk

School of Aviation has five students enrolled for flying instruction this Winter. Following the loss of several planes in the Sept. hurricane, Mr. Chalk is back in the field with renewed vigor. He has the agency for the Waco and also Edo equipment. Doc Patten is in charge of maintenance at the airport, which is located on the country, connecting Miami and Miami Beach. This is an ideal location for airplane operations.

The Rayon Air Lines, Inc., have completed the construction of their new building at the Miami airport located at the foot of 8th Street on the corner of 10th Street. The building is a modern structure equipped with C-60 engines and facilities to render a real air service to the traveling public; the Rayon Air Lines are to be considered as their efforts. Service to Cuba, Mexico, and the Bahamas, as well as short flight using Edo's and Miami is furnished at reasonable rates.

The Florida Airways Corporation started daily service to Fort Myers, Tampa, Jacksonville, Miami and Atlanta. They operate a plane each way daily except Sunday. Between Nov. 30 air mail has been successfully carried out in the past few months with ninety-eight per cent efficiency. Between Miami and Tampa the company is at present using Studebaker aircraft, powered with a Liberty engine and having a capacity of eight passengers.

A. B. Chalk made a trip over the Florida Keys Sunday, Dec. 12, with two passengers who desired to try flying from the mainland to Key West. It compared with Edo facts. A very successful match was had following from the member of

competitors, etc. taken from the front cockpit after checking how it felt for a job story. The two airbikes have decided to use the airplane and have abandoned the ship for the next few months.

The Rayon Air Lines, Inc. is preparing to keep all of their ships in the air. Bradley is their biggest flyer although many trips to the Bahamas are made during the week. They offer an excellent replacement for air travel to Cuba.

The Florida Airways Corporation is operating right up to snuff today. A plane each way and on schedule—well, the company reports 66 per cent efficient operation over the last six months' period. The company promises night flying, if Miami will furnish a permanent airport. The present airport is only temporary and not permanent property. The Department of Commerce should study to light the airway from Miami to Jacksonville if the city will cooperate. We are pushing this now.

We have 34 flying days here in Miami. "It's driving fast now."

Ocala, Fla.

By C. C. Rapetti

The Ocala Airlines Inc., of which Louis E. C. Nelson is the president, has secured a large field, formerly known as "Buck's Field" and has just completed the construction of a large five plane hangar.

The field is sufficiently large to allow landing and taking off under any wind direction and is equipped with mud and sand. The roof of the hangar is worked with air foot ladders.

At present the company has a Waco, one model Stearman and two are Stearman in use, and the personnel consist of three master pilots and instructors, men of wide experience.

The Ocala Airlines, Inc., has made it a point to demonstrate standing of any kind and has thereby established a reputation for conservative flying that is building a business in short flights, cross country work and group flights. It is also equipped for photography and map making.

A number of students are taking flying instruction and with the ideal weather conditions of Florida, are making rapid progress.

With the opening of new flying fields at St. Petersburg, Tampa, Jacksonville, and other well located points, the use of the plane as a transportation medium is being recognized by Florida business men.

More of our winter tourists are learning that the location of Florida, as best as seen from the air and there is hardly a ground station that the Florida Airways is not busy making hops over Orlando as fast as trips can be made.

Various pilots will be welcome at the field and supplies of gasoline and oil are available at all times.

Electra, Texas

By Thomas J. Reed

There had been no flying here for the past two weeks because of the bad weather.

Joe Phillips is now in Dallas, waiting for the completion of repairs to his Cessna. C. L. Bird has an Edo in El Paso and is having a longer haul for E. T. J. Reed is trying to reach Paul Russell, of Oklahoma City, out at a fast Cessna. Bird's waiting him back.

The local field is to be graded and leveled up, so that line and venting pilots will have an easier time in taking off and landing.

Columbus, Ohio

By Capt. Louis G. Miller

Morton Field, which is under the Management of the Columbus Flying Service, and is operated by Capt. Louis G. Miller, is doing one of its most successful operating seasons. The Columbus Flying Service has carried several thousand passengers for local flights, produced several students, flown on a number of photographic missions, and has piled up over 400 hours flying time on air Waco planes, the engine of which was given bad new overhauling during this time.

Mr. Cherry, who for the past two years has been flying a

YOUR AIRPORT

REQUIRES THE MAXIMUM ILLUMINATION OVER THE ENTIRE FIELD FOR SAFE NIGHT LANDINGS.



Every progressive city with a municipal airport will eventually need this 500,000,000 candle power landing light.

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As a LANDING FIELD LIGHT it illuminates over 50 acres with a fan of evenly distributed light.

As an EMERGENCY BEACON (with the floodlight lens hinged back) its 30,000,000 candle power beam will penetrate a low lying haze to a greater distance than the standard incandescent revolving beacon.

As a CEILING LIGHT elevate its beam to an angle of 45°.

Write for bulletin 20-1642.



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modified Vought at Burbury Lake, recently sold his plane and is going to quit. Ralph Brown, one of Captain Miller's students, has purchased a new West plane.

Colombia is making preparations for the new air mail line, which will start in the Spring. Strong cooperation is expected from local stations upon the inauguration of this service.

All repairs flying at this field has been definitely suspended, due to the lack of experience of the old aviation Journal, which cost \$22.50 an hour to fly.

The Aero Club is going strong. With its new \$25,000 house completed, it is waiting for pilots to use it. The club facilities are free of charge, it is located on the field and well equipped. Hangar space, gasoline and oil are available at all times.

We would like to hear from the commercial pilots of Ohio in regard to approving a professional pilots' association.

Checkerboard Flying Field, Forest Park, Ill.

The Yerkes Aircraft Company announces a prosperous and active year. During 1936 between seventy and eighty thousand dollars worth of business was transacted. A total of 8,705 passengers were carried, 116 km of work was done for photographic purposes, twenty-two students were taught to fly and 89,680 worth of work was done for newspapers. The company has had 481 transient planes on the field and has totaled 112,600 miles in cross-country flight.

The field has three runways, two of which are under and over N.E. and S.W. 1,450 ft., and S.E. and N.W. 1,500 ft. The main runway is 120 ft. by 40 ft. and the McCune Wood hangar is 30 ft. by 68 ft. There buildings, fuel for engines, wing and engine maintenance, have a floor space of 4,000 ft., and the warehouse is 38 ft. by 30 ft.

The S.A.T. runs the hangar space, shops, fuel office, and equipment at the Raymond terminal and all mechanical assistance, oil and gasoline supply service is furnished to the Northwestern Airways from the Checkerboard Field.

St. Joseph, Mo.

On Dec. 5 the City of St. Joseph made the final payment on Ramsey Field and now owns one of the best flying fields in the Midwest. At present it covers forty-five acres, but adjoining land could give it an expansion to 3,000 acres, if necessary. The field has a hangar 56 ft. by 140 ft., with shops, which are completed by the National Air Transport, Inc., and an ample water tank.



The hangar and one of the airplanes at the Ramsey Airport Co., Overbrook, Ky.

Owego, N. Y.

By Lewis W. White

The roof of the Hotel Airways has the word O-wego painted on it in white, with an arrow-pointing North.

Owego is in the southern tier of the state and about half way between New York City and Buffalo. The broad valley of the Seneca river and the wide river makes it possible for either local or long-distance to land early and safely. The field is one mile West of the town and will carry a large wind over, visible from the thousand feet. Gasoline and oil may be obtained here at cost. The tower is directly in front of the hotel. This is a three' hotel and a small restaurant is available to all of the air also coming this way to sleep and pay at a cost.

Heas Aircraft Co. Completes Publicity Tour

The publicity tour, sponsored by the Detroit Chamber of Commerce to stimulate interest in commercial aviation in Michigan, and conducted by the Heas Aircraft Co., ended Dec. 3, after the first stop in visiting the principal cities of the State. These participating in the tour were Capt. Earl Moore, Capt. D. W. Brown and N. D. Brown all of the Heas Aircraft Co.

The tour started on Dec. 26 with Battle Creek the first stop. The focus was followed by the various committee of the Chamber of Commerce and later attended a meeting of the Rotary Club. The interest in commercial aviation was found to be strong in Battle Creek. The field located on the North-west side of the city, is held under option for this year. It is a level, having two runways of 2,300 ft. each, with hangar and engine house. The field is open throughout the year. Kalamazoo and Grand Rapids are the visiting place in Michigan and will be followed in each city, several days for the operation of commercial aviation. These cities have well equipped fields.

At Muskegon (the place hotel of the Continental Airport)

owned by the Continental Airlines Corp. A meeting at noon, under the auspices of the Rotary Club, and a dinner at night, given by the Country Club, were the events by which the arrival of the three was brought to the attention of local officials.

The City Club, of Muskegon, which is responsible for the purchase of land soon to be developed into an airport in this city, held a meeting shortly after the plane arrived. From the interest displayed by this organization is the interest of aviation, the establishment of an airport of which the city may be proud is assured. Two runways, a half mile and a gasoline station as desired, will be built and all the conveniences that go with a modern airport will be installed. The airport is near Lake Michigan, which is connected with Lake Michigan.

The Lakes Club of Lansing featured the visitors a luncheon, at which 150 of the leading business men followed to address an audience relating to aviation. Lansing has a field, even in Grosse Pointe, Michigan, for the development of an airport. This will be completed by Spring.



War Fliers Hold Eighth Celebration

The First World War Squadron Association, whose membership comprises men who served as warplane pilots, held its eighth annual dinner at the Hotel Ambassador on Dec. 3. Capt. Fred Anderson was guest of honor.

Speeches were given by Capt. Anderson, who was the guest of honor, and several other speakers were present. The dinner was held in the ballroom of the hotel, which was decorated for the occasion. The speakers were: Capt. Anderson, who was the guest of honor, and several other speakers were present.

The association is one of the first to receive the right years since the time of the War.

A FOKKER Reliability Tour

Commander Byrd's FOKKER TRIMOTOR, after completing the 1925 Ford Reliability Tour with a perfect score, flying subsequently 15,000 miles between various cities, from New York to Cuba and return and then to the North Pole, has just completed a tour of 5,500 miles around the United States. 45 cities were visited on the trip from New York to San Diego via Chicago and San Francisco, returning to New York via New Orleans and Panama, Fla. Flying exactly to schedule, the trip was completed in 46 days.

Total mechanical difficulties and replacements in airplane—nil.

Total mechanical difficulties and replacements in three Wright R-1600 engines—one valve spring.

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Cruising speed, 110 MPH	Max speed, 130 MPH	Pay load, 1000 lbs
Passenger, 6 including pilot	Cruising range, 5 1/2 hours	Colling, 15,000 feet

Orders Are Now Being Accepted for Spring Delivery

The BELLANCA "PACER" is especially adapted for Passenger, Air Mail and Express routes where Speed Reliability and Capacity are absolutely essential.

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Excellent performance with remarkable inherent stability and ease of control.

Construction incorporates numerous refinements designed for simplicity, strength and inter-changeability of parts.

At \$2,000 the Pitcairn Orowing is the lowest priced modern commercial aeroplane on the market.

Complete description on request.

Inquiries invited looking to dealer representation for Pitcairn Planes

PITCAIRN AIRCRAFT, INC.
LAND TITLE BUILDING PHILADELPHIA

(Continued from page 54)

During the War, Lieutenant Hest's was decorated with the Distinguished Service Cross with two oak leaves. The Credit to Hest was given with the Grant of the Knight of the Legion of Honor, and the Military Cross of Great Britain. He was officially credited with the destruction of seven enemy planes.

As a result of his capable handling of the 1926 National Pitcairn Team from Little Rock, Ark., he will be invited to take charge of the 1927 race to be started from Akron, Ohio, members of the local committee there have indicated.

Japan Hoaxes Round-the-World Flies

The Japanese Government recently announced its intention of decorating the American aviators who participated in the Army flight around the world. (Last) (Last) H. Smith, Lieut. Leslie P. Arnold, and Lieut. Harry J. Gurney were awarded the Order of the Sacred Treasure, while Lieut. Ralph W. Wain, Lieut. Earl H. Nelson and Lieut. John Harding, Jr., received the Order of the Rising Sun. The Japanese Ambassador, Dr. Taro Katohara, Tsurumi Matsumoto, had hoped to make



Endowed and Decorated

The Japanese Consul General Gluck, conferring Japanese decorations on Lieut. Leslie P. Arnold and Lieut. Earl H. Nelson, two of the Army fliers of the Round-the-World Flight. Lieut. Col. William C. Foster is on the right.

the presentation in person in behalf of his government. But this plan necessarily had to be changed because of the impossibility of assembling the personnel at the flight due to such a journey. Lieutenant Smith is stationed in Honolulu, and Lieutenant Nelson and Gurney are in California. Lieutenants Wain, Harding and Nelson are now out of the active service. Col. Makera Morita, E. A. Japanese Military Attaché, called in the War Department to confer on the preliminary details of the presentation stating that the decorations had already arrived in this city. An Act of Congress (Public No. 479, 68th Congress) awarded to these officers the Distinguished Service Medal and also authorized each of them to accept one foreign medal as decoration.

Proposed for Special Type Observation Airplane

Office of the Contracting General, McCook Field, Dayton, Ohio, Special proposals will be received here until 10:30 A. M. April 4, 1927 for the development of a special type observation airplane and describing proposed airplanes in quantities of one, two or three at Government's option for test, with option to place additional order for two airplanes at cost of number number to be named. Further information on application.

(Continued on page 55)

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Made first North Pole flight by Commander Richard Byrd in Fokker 3-engined plane.

Won 1st place Annual Reliability Tour of 2,555 miles in Travel Air plane carrying 600 lbs. pay load, average speed 124½ m.p.h.

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Won 3rd Place Annual Reliability Tour in Stinson "Detroit" carrying 640 lbs. pay load, average speed 106.7 m.p.h.

Won Transport Race for Detroit News Air Transport Trophy at Philadelphia in Wright Bellanca carrying 1,607 lbs. ballast at 121.33 m.p.h.

Won Light Commercial Race at Philadelphia carrying 1,145 lbs. ballast at 121.36 m.p.h.

Won 12 out of 18 prizes they competed for at Philadelphia.

Won 3 First Prizes at Denver Mile High Air Meet in Ryan M-1.

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Varney Air Mail Service—172,080 miles with \$78 cost of engine parts on their 520 mile route across the Rocky Mountains from Salt Lake to State of Washington using 7 WHIRLWINDS exclusively in Swallows.

Colonial Air Transport—89,000 miles with \$225 cost of engine parts on their 192 mile route New York to Boston, using 4 WHIRLWINDS exclusively on this route in Fokker and Curtiss planes and 3 in their Fokker Airliner.

Pacific Air Transport—251,700 miles on their 1,121 mile route Los Angeles to Seattle using 8 WHIRLWINDS exclusively in Ryan and Travel Air planes.

Northwest Airways since October—39,600 miles on their route 377 miles Chicago to St. Paul using WHIRLWINDS exclusively in Stinson "Detroiters."

National Air Transport—30,980 engine miles as part equipment for their 987 mile route Chicago to Dallas in Travel Air, Ford—3-engine plane and Wright Bellanca.

Florida Airways—74,690 miles, as part equipment, on their 683 mile route Atlanta to Miami using 4 WHIRLWINDS in Stinson and Curtiss planes. Carried \$2,000,000 currency into Miami from Atlanta the day after the hurricane, in Stinson "Detroiters".

Canadian Air Express 40,590 miles on their route at Red Lake, Canada, using 3 WHIRLWINDS exclusively in Stinson "Detroiters" and Curtiss Larks.

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